What is claimed is:

1. Linear compensated amplifying equipment comprising:

a non-linear distortion compensator that determines a non-linear distortion compensation coefficient from a look-up table using instantaneous power of a transmission signal as an address and performs non-linear distortion compensation using a complex product of said determined coefficient and said transmission signal;

a first quadrature modulator that quadrature-modulates output of said non-linear distortion compensator;

a second quadrature modulator that quadrature-modulates said transmission signal;

a main power amplifier that amplifies output of said first quadrature modulator;

a non-linear distortion extractor that extracts a non-linear distortion signal by controlling a phase and amplitude of one of (a) output of said main power amplifier and (b) output of said second quadrature modulator and by synthesizing said two signals so that said two signals are in opposite phase;

an auxiliary power amplifier that amplifies the extracted non-linear distortion signal; and

a modulation signal synthesizer that controls a phase of one of (c) output of said main power amplifier and (d) output of said auxiliary amplifier, and synthesizes said two signals so that said two signals are in opposite phase.

2. The linear compensated amplifying equipment as set forth in Claim 1 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier.

3. The linear compensated amplifying equipment as set forth in Claim 1 wherein the control of a phase in said modulation signal synthesizer is performed before said auxiliary power amplifier.

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4. The linear compensated amplifying equipment as set forth in Claim 1 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier and the control of a phase in said modulation signal synthesizer is

10   performed before said auxiliary power amplifier.

5. Linear compensated amplifying equipment comprising:

a non-linear distortion compensator that computes instantaneous power of a transmission signal, computes a non-linear

15   distortion compensation coefficient using said instantaneous power in accordance with a prepared approximation expression, and performs non-linear distortion compensation using a complex product of said determined coefficient and said transmission signal;

a first quadrature modulator that quadrature-modulates

20   output of said non-linear distortion compensator;

a second quadrature modulator that quadrature-modulates said transmission signal;

a main power amplifier that amplifies output of said first quadrature modulator;

25   a non-linear distortion extractor that extracts a non-linear distortion signal by controlling a phase and amplitude of one of (a) output of said main power amplifier and (b) output of said second quadrature modulator and by synthesizing said two signals so that said

two signals are in opposite phase;

an auxiliary power amplifier that amplifies the extracted non-linear distortion signal; and

a modulation signal synthesizer that controls a phase of one of (c) output of said main power amplifier and (d) output of said auxiliary amplifier, and synthesizes said two signals so that said two signals are in opposite phase.

6. The linear compensated amplifying equipment as set forth in Claim 5 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier.

7. The linear compensated amplifying equipment as set forth in Claim 5 wherein the control of a phase in said modulation signal synthesizer is performed before said auxiliary power amplifier.

8. The linear compensated amplifying equipment as set forth in Claim 5 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier and the control of a phase in said modulation signal synthesizer is performed before said auxiliary power amplifier.

9. Linear compensated amplifying equipment comprising:

a quadrature modulator that quadrature-modulates a transmission signal;

a non-linear distortion compensator that renders characteristics opposite to those of a main power amplifier except for gain to the quadrature-modulated signal;

said main power amplifier that amplifies the modulated signal subjected to non-linear distortion compensation;

a non-linear distortion extractor that controls a phase and amplitude of one of (a) output of said main power amplifier and (b) output of quadrature modulator, and synthesizes said two signals so that said two signals are in opposite phase;

an auxiliary power amplifier that amplifies the extracted non-linear distortion signal; and

a modulation signal synthesizer that controls a phase of one of (c) output of said main power amplifier and (d) output of said auxiliary power amplifier, and synthesizes said two signals so that said two signals are in opposite phase.

10. The linear compensated amplifying equipment as set forth in Claim 9 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier.

11. The linear compensated amplifying equipment as set forth in Claim 9 wherein the control of a phase in said modulation signal synthesizer is performed before said auxiliary power amplifier.

12. The linear compensated amplifying equipment as set forth in Claim 9 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier and the control of a phase in said modulation signal synthesizer is performed before said auxiliary power amplifier.

13. The linear compensated amplifying equipment as set forth in

Claim 9 wherein said non-linear distortion compensator is made of a non-linear element.

14. Linear compensated amplifying equipment comprising:

5        a first non-linear distortion compensator that determines a non-linear distortion compensation coefficient from a look-up table using instantaneous power of a transmission signal as an address and performs non-linear distortion compensation using a complex product of said determined coefficient and said transmission signal;

10       a first quadrature modulator that quadrature-modulates output of said non-linear distortion compensator;

a second quadrature modulator that quadrature-modulates said transmission signal;

a main power amplifier that amplifies output of said first 15 quadrature modulator;

a non-linear distortion extractor that extracts a non-linear distortion signal by controlling a phase and amplitude of one of (a) output of said main power amplifier and (b) output of said second quadrature modulator and by synthesizing said two signals so that said 20 two signals are in opposite phase;

a second non-linear distortion compensator that renders characteristics opposite to those of an auxiliary power amplifier except for gain to the extracted non-linear distortion signal;

said auxiliary amplifier that amplifies output of said 25 second non-linear distortion compensator; and

a modulation signal synthesizer that controls a phase of one of (c) output of said main power amplifier and (d) output of said auxiliary power amplifier, and synthesizes said two signals so that said

two signals are in opposite phase.

15. The linear compensated amplifying equipment as set forth in Claim 14 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier.

16. The linear compensated amplifying equipment as set forth in Claim 14 wherein the control of a phase in said modulation signal synthesizer is performed before said auxiliary power amplifier.

17. The linear compensated amplifying equipment as set forth in Claim 14 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier and the control of a phase in said modulation signal synthesizer is performed before said auxiliary power amplifier.

18. The linear compensated amplifying equipment as set forth in Claim 14 wherein said second non-linear distortion compensator is made of a non-linear element.

19. Linear compensated amplifying equipment comprising:

a first non-linear distortion compensator that computes instantaneous power of a transmission signal, computes a non-linear distortion compensation coefficient using said instantaneous power in accordance with a prepared approximation expression, and performs non-linear distortion compensation using a complex product of said determined coefficient and said transmission signal;

a first quadrature modulator that quadrature-modulates output of said non-linear distortion compensator;

a second quadrature modulator that quadrature-modulates said transmission signal;

5        a main power amplifier that amplifies output of said first quadrature modulator;

a non-linear distortion extractor that extracts a non-linear distortion signal by controlling a phase and amplitude of one of (a) output of said main power amplifier and (b) output of said second

10      quadrature modulator and by synthesizing said two signals so that said two signals are in opposite phase;

a second non-linear distortion compensator that renders characteristics opposite to those of an auxiliary power amplifier except for gain to the extracted non-linear distortion signal;

15      said auxiliary power amplifier that amplifies output of said second non-linear distortion compensator; and

a modulation signal synthesizer that controls a phase of one of (c) output of said main power amplifier and (d) output of said auxiliary power amplifier, and synthesizes said two signals so that said

20      two signals are in opposite phase.


20. The linear compensated amplifying equipment as set forth in Claim 19 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power

25      amplifier.


21. The linear compensated amplifying equipment as set forth in Claim 19 wherein the control of a phase in said modulation signal

synthesizer is performed before said auxiliary power amplifier.

22. The linear compensated amplifying equipment as set forth in Claim 19 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier and the control of a phase in said modulation signal synthesizer is performed before said auxiliary power amplifier.

23. The linear compensated amplifying equipment as set forth in Claim 19 wherein said second non-linear distortion compensator is made of a non-linear element.

24. Linear compensated amplifying equipment comprising:

a quadrature modulator that quadrature-modulates a transmission signal;

a non-linear distortion compensator that renders characteristics opposite to those of a main power amplifier except for gain to the quadrature-modulated signal;

said main power amplifier that amplifies the modulated signal subjected to non-linear distortion compensation;

a non-linear distortion extractor that controls a phase and amplitude of one of (a) output of said main power amplifier and (b) output of said quadrature modulator, and synthesizes said two signals so that said two signals are in opposite phase;

a second non-linear distortion compensator that renders characteristics opposite to those of an auxiliary power amplifier except for gain to the extracted non-linear distortion signal;

said auxiliary power amplifier that amplifies output of

said second non-linear distortion compensator; and

a modulation signal synthesizer that controls a phase of one of (c) output of said main power amplifier and (d) output of said auxiliary power amplifier, and synthesizes said two signals so that said two signals are in opposite phase.

25. The linear compensated amplifying equipment as set forth in Claim 24 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier.

26. The linear compensated amplifying equipment as set forth in Claim 24 wherein the control of a phase in said modulation signal synthesizer is performed before said auxiliary power amplifier.

27. The linear compensated amplifying equipment as set forth in Claim 24 wherein the control of a phase and amplitude in said non-linear distortion extractor is performed before said main power amplifier and the control of a phase in said modulation signal synthesizer is performed before said auxiliary power amplifier.

28. The linear compensated amplifying equipment as set forth in Claim 24 wherein said second non-linear distortion compensator is made of a non-linear element.